FROM THE

JOURNAL OF ANATOMY AND PHYSIOLOGY

VOL. XLVI.

SIX SPECIMENS OF ABNORMAL HEART. By ARTHUR KEITH,

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DURING the last twelve months six specimens of malformed heart have been added to the Museum of the Royal College of Surgeons, which illustrate the majority of lesions found in the child's heart at birth. The conditions which these specimens illustrate are the following:[1]—

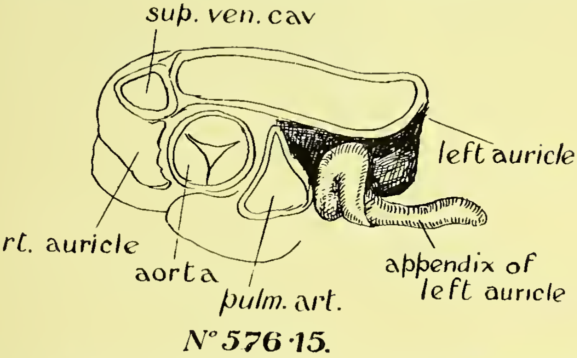

FIG. 1.—Heart of a woman aged 63, who died from kidney disease, showing an abnormally long appendix to the left auricle. After death it was found to measure 4 inches. Presented to Museum by Dr Angas Johnson, 1911.

1. Great elongation of the appendix of the left auricle. Dr Angas Johnson who measured the specimen at the post-mortem examination found that it was four inches in length, resembling in shape and size the appendix of the cæcum. The appendix of the left auricle varies much in length, but I have found no record of specimens similar to that of Dr Johnson (see fig. 1).

2. Obliteration or complete arrest in the development of the right

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[1] The nature of these lesions has been already discussed by the writer (see Keith, *Lancet*, August 7, 14, 21, 1909; *Studies in Pathology*, edited by William Bulloch, M.D., 1906).

auriculo-ventricular orifice, of its valves, and of the *body* or main part of the right ventricle (see fig. 2).

3. Various conditions of the infundibular or bulbus part of the right ventricle. Its cavity may be obliterated as in specimen shown in fig. 3; it may be arrested so as to form a small semi-isolated chamber as in 597·12 (fig. 6); it may be the only part of the cavity of the right ventricle which is developed as in 620·03 (fig. 2); when the great aortic stems are transposed the bulbus chamber may be seen at the opening of the pulmonary artery from the left ventricle (fig. 5).

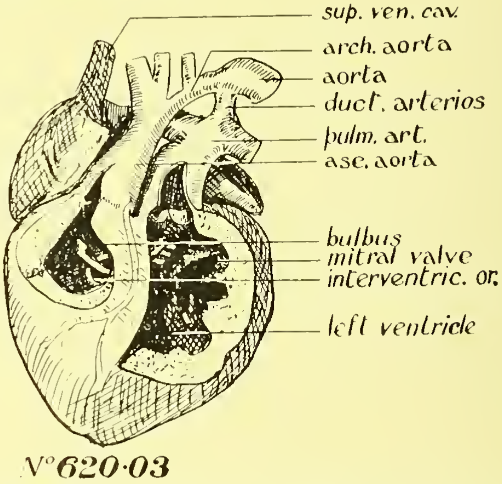
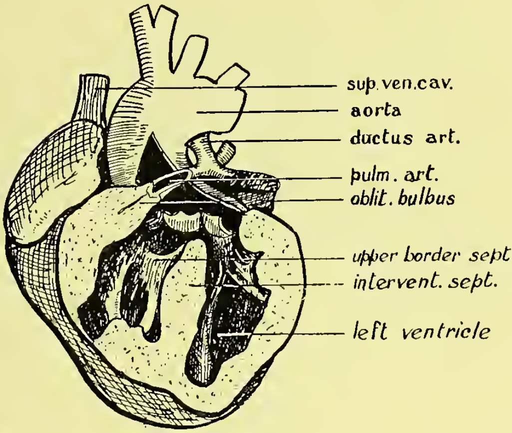


Fig. 2.—Heart of a child aged 9 weeks. It shows the following malformations; (1) the right auriculo-ventricular orifice is closed or undeveloped, and so is the body of the right ventricle; (2) the infundibular or bulbus part of that ventricle is present and receives its blood from the left ventricle through a patent inter-ventricular orifice; (3) the arterial stems are transposed and communicate by a widely open ductus arteriosus; (4) the left ventricle is hypertrophied and dilated, so is the pulmonary artery which arises from it; (5) the aortic arch between the origin of the left carotid and ductus arteriosus is reduced to a diameter of 3 mm. (See description by Dr Jane Robertson, *Lancet*, 1911, i. p. 872.) Presented to Museum by Dr Ivy Mackenzie.

4. The left auriculo-ventricular orifice and left ventricle may be completely arrested in development; their situation being marked by a fibrous cicatrix as in 616·7 (fig. 4).

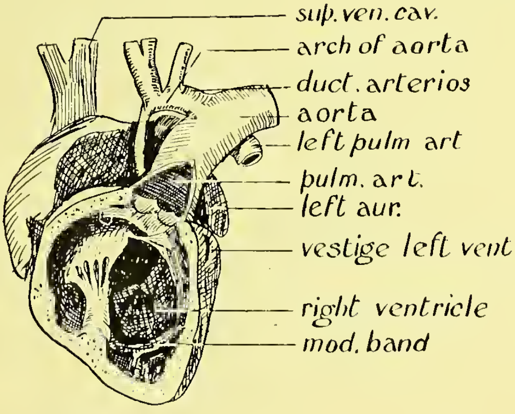
5. The aortic stems may be transposed as in 620·03 (fig. 2) and 571·04 (fig. 5). In both of these the pulmonary artery is placed in the usual position occupied by the aorta.

6. Stenosis of the aortic orifice 616·7 (fig. 4), a rare condition in England but evidently a common one in Russia. All the specimens show an open ductus arteriosus.



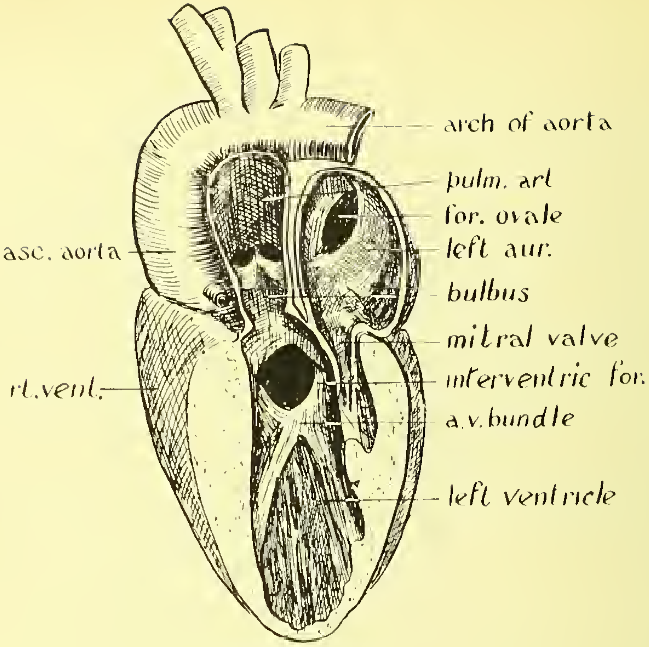
N°606·1

Fig. 3.—Heart of a female child aged 11 months. It shows the following condition: (1) the pulmonary artery receives its blood through the ductus arteriosus; (2) the cavity of the bulbus or infundibular part of the right ventricle is obliterated; (3) the right and left ventricles are seen to communicate by a wide inter-ventricular foramen. Cyanosis was present from birth; no bruit; death from bronchitis. Presented to Museum by Dr Basil Price, 1911.



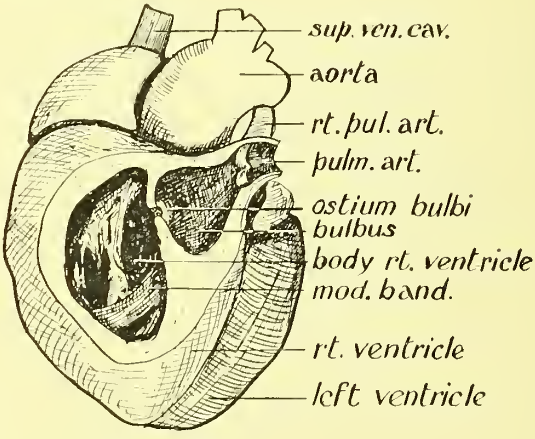
N° 616·7

Fig. 4.—Heart of a child aged 2 days, showing (1) stenosis of the aorta; (2) obliteration of the left auriculo-ventricular orifice and of the left ventricle—only a trace of these structures is visible; (3) the left auricle is small—its blood reached the right by the foramen ovale; (4) the right ventricle is dilated. The child weighed 9 lbs. and appeared healthy at birth; cyanosis appeared after 16 hours, and death after 48 hours. Presented to Museum by Dr Eric Gardner, 1911.



N°571·04

FIG. 5.—Transposition of the arterial stems—the pulmonary artery, thin walled and dilated, arising behind the aorta from the left ventricle. The inter-ventricular orifice is large, and apparently nearly all the blood of both chambers escaped by the aorta. Two of the pulmonary valves have been united during development; beneath the valves is seen a small chamber which represents the bulbus or infundibulum. The foramen ovale is also open. The subject of the malformation (sex ?) lived to the age of 16 years and was intensely cyanosed. Presented to Museum by Staff of Sussex County Hospital, September 1911.



N°597·12

FIG. 6.—Malformed heart of a child which died at the age of 8 months. The infundibulum or bulbus of the right ventricle is represented by a small chamber which communicates with the cavity of the right ventricle by the ostium bulbi. The pulmonary artery is small and thin walled. The inter-ventricular orifice is widely open, the aorta is dilated because it received practically all the blood of both right and left ventricles. Presented to Museum by Staff of Sussex County Hospital, September 1911.